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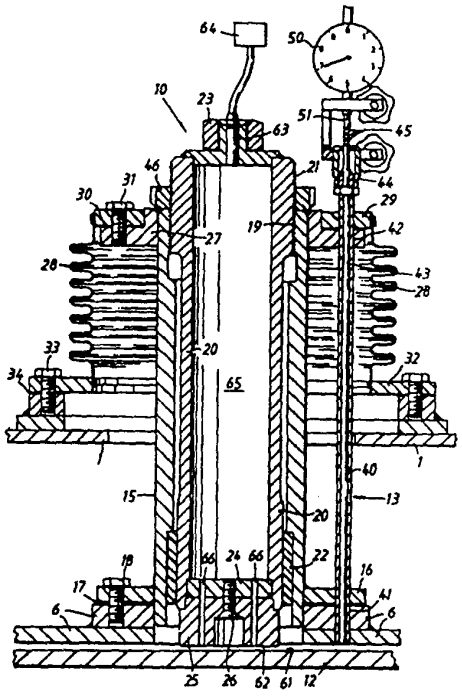
(54) Title: REGENERATIVE HEAT EXCHANGER AND A METHOD FOR OPERATING A REGENERATIVE HEAT EXCHANGER

(57) Abstract

In a regenerative heat exchanger of the kind having a rotor (2) mounted in a casing (1), supports (10) are provided for maintaining a certain clearance between the rotor (2) and movable plates (6, 8) connected to the casing (1) and located closed to the rotor ends. Each support co-operates through a guided surface (62) on a sliding shoe (25) with a guiding surface (61) on a flange (12) on the rotor (2). According to the invention the support (10) is provided with water conduit means (63, 65, 66) ending in the guided surface (62) and being connected to a water source of a pressure sufficient to establish a gap between the guided (62) and the guiding (61) surface so that a cushion of vaporized water is established between the surfaces (61, 62) as the water vaporizes by contact with the guiding surface (61), which is hot, and escapes from the conduit means (63, 65, 66) through the gap.



Claims:

1. Regenerative heat exchanger with a substantially cylindrical rotor (2) mounted in a casing (1), which casing (1) is provided with at least one movable plate (6, 8) arranged closed to said rotor (2) which movable plate (6, 8) is affected by a resultant force towards said rotor (2), the heat exchanger being provided with support means (10, 61, 62) for maintaining a certain clearance between said rotor (2) and said movable plate (6, 8), said support means (10, 61, 62) including a circumferentially continuous guiding surface (61) on said rotor (2) and at least one guided surface (62) connected to said movable plate (6, 8), said guided surface (62) being parallel to and facing said guiding surface (61), characterized in that said movable plate (6, 8) is provided with water conduit means (63, 65, 66; 67) ending in said guided surface (62) and being connected to a water source (64) of a pressure sufficient to establish a gap between said guided surface (62) and said guiding surface (61) against the action of said resultant force, thereby establishing a cushion of at least partly vaporized water between said surfaces (61, 62) as said water at least partly vaporizes by contact with said guiding surface (61) and escapes from said conduit means (63, 65, 66; 67) through said gap.

2. Heat exchanger according to claim 1, wherein said movable plate (6, 8) is located closed to one of the ends of said rotor (2) in an orientation substantially perpendicular to the axis of said rotor (2) and separating axially directed openings communicating with ducts for heat transferring media, said guiding surface (61) being located on an edge flange (12) at the periphery of the related end of said rotor (2) and being perpendicular to the axis of said rotor (2).

3. Heat exchanger according to claim 2, wherein said movable plate (6, 8) is sector-shaped and having a radially outer end adjacent to said edge flange (12) and a radially inner end pivotally connected to a centre plate (5, 7) rigidly fixed to said casing (1) said movable plate (6, 8) being provided with two said guided surfaces (62), which are peripherally distributed and being individually axially adjustable in relation to said movable plate (6, 8).

4. Heat exchanger according to any of claims 1 to 3, wherein each said guided surface (62) is a surface on a sliding shoe (25) and said water conduit means includes a plurality of

channels (66) through said sliding shoe (25) and ending through a plurality of openings in sai guided surface (62).

5. Heat exchanger according to any of claims 1 to 3, wherein said guided surface (62) is surface on a sliding shoe (25) and said water conduit means includes at least one channel (66 through said sliding shoe and a recess (67) in said guided surface (62), said channel (66) ending in said recess (67), and said recess (67) having a larger cross-flow area than said channel (66).

6. Heat exchanger according to claim 5, wherein said recess (67) has a conical wall (68) widening towards said guided surface (62).

7. Heat exchanger according to claim 4, wherein at least some of said channels (66) are inclined relative the axis of said rotor (2).

8. A method for operating a regenerative heat exchanger to maintain a certain clearance between a substantially cylindrical rotor (2) of the heat exchanger and a movable plate (6, 8) arranged close to said rotor and being connected to a casing (1) of the heat exchanger, said rotor (2) having a circumferentially continuous guiding surface (61) co-operating with a guid surface (62) connected to said movable plate (6, 8) said guided surface (62) being parallel to and facing said guiding surface (61), characterized by supplying water through water conduit means (63, 65, 66, 67) ending in said guided surface (62), said water having a pressure sufficient to establish a gap between said guided surface (62) and said guiding surface (61) against the action of said resultant force, thereby establishing a cushion of at least partly vaporized water between said surfaces (61, 62) as said water at least partly vaporizes by contact with said guiding surface (61) and escapes from said conduit means (63, 65, 66, 67) through said gap.